

## **HEMI-SYNC® AND THE FACILITATION OF SENSORY INTEGRATION**

*by Suzanne Evans Morris, Ph.D.*

*Suzanne Evans Morris, a speech-language pathologist and educator in private practice near Charlottesville, Virginia, is nationally and internationally known for her work with children with developmental disabilities. Dr. Morris maintains a practice which includes direct clinical work, continuing-education workshops, development of clinical materials, and clinical research. She is the director of New Visions, which sponsors innovative professional workshops and provides family-oriented clinical services. She is also a member of the TMI Board of Advisors.*

The ability to organize and integrate multisensory information is central to attention and learning. Children with sensory integrative dysfunction experience learning difficulties which range from severe retardation to mild, specific learning disabilities. The state of awareness facilitated by Hemi-Sync has been effective with these children because of its clinical association with an increased focus of attention, greater openness to learning, and improved sensory organization. Dr. Morris used videotaped examples with a theoretical model to explain how some of the changes in function may occur.

“Sensory integration,” she explained, “is a term used to describe the way in which the brain sorts out and organizes for our use the many sensations we receive. It allows us to ‘put together’ parts to create a whole; it attaches meaning to sensations through comparing them with past experiences; it enables high levels of motor coordination; it is the basis of perception.” Because learning is presumed to be a function of the brain, and disorders of learning reflect a deviation in neural function, sensory input plays a critical role in brain function.

“None of us organizes sensations perfectly,” Dr. Morris continued. “There is a continuum of skill in sensory processing and integration. A high level of sensory integration may enable an individual to be a skilled gymnast or artist. Most of us have average abilities in this area.” About 5% to 10% of children experience “sensory integrative dysfunction,” which means they have enough problems with sensory integration to cause slow learning, specific learning disabilities, or behavioral problems. Those with the poorest sensory integrative abilities usually have tremendous difficulty functioning in our complex world, and “. . . may fall within the diagnostic categories of severe mental retardation.”

Some of the common characteristic differences of these children in their early development are: delays in learning to sit, stand, walk, run, tie shoes, or ride a bike; poor muscle tone;

delays in language development; difficulty coloring or putting puzzles together; dislike of touch sensations; difficulty focusing attention, hyperactivity, and irritation or distraction by certain kinds of light or noise; and problems with social interaction and academic learning. Stimuli from the external environment can be chaotic because “in sensory integrative dysfunction, the brain does not process or organize the flow of sensory impulses in a way that gives the individual precise information about himself and the world. Children with severe [integrative] difficulties... experience what we might call sensory overload. In order to survive the sensory chaos, portions of the brain shut down and the child may appear to be deaf, blind, autistic, or severely retarded.”

Although sensory integration occurs at all levels of the central nervous system, the brain stem appears to play the most significant role in sensory processing. “The brain stem and the thalamus,” Dr. Morris explained, “receive sensory information from every sensory modality. Information passing through these structures is modified, integrated with other sensory information, and directed to the cortex of the brain.” As multisensory input is received by the brain, it acts to filter from consciousness, or dampen, any information which does not support the learner’s inner needs and goals. “Children who have been labeled hyperactive are unsuccessful in filtering out irrelevant information.”

Dr. Morris employs an effective treatment for sensory integrative dysfunction called sensory integrative therapy, which provides controlled sensory input in a way that allows the child to integrate sensations and enhance brain organization. “Treatment includes activities that allow sensory integration to occur primarily at the brain-stem level.” To augment sensory integrative therapy techniques, she utilizes music and Hemi-Sync. Summarizing a discussion of brain neurophysiology and clinical evidence relative to the facilitation of sensory integration through the auditory system, Dr. Morris stated, “Both clinical experience and preliminary research indicate that the addition of Hemi-Sync signals (containing frequencies which produce more Theta patterns in the brain) to the background music increases the child’s focus of attention and creates a mental set of open receptivity.”

Citing an informal pilot study of twenty developmentally disabled children, Dr. Morris reported that each child was evaluated during learning/therapy sessions in three ways: 1) therapy only during the first third of the session; 2) therapy and music during the second third of the session; 3) therapy and music with Hemi-Sync during the last third of the session. Informal data was collected on each child. Two of the children responded negatively to the Hemi-Sync with music, and its use was discontinued. Fifteen of the remaining eighteen children continued to receive music with Hemi-Sync. These children showed positive changes in the behaviors being addressed in treatment. “Changes which were observed,” said Dr. Morris, “included improved focus of attention, reduction in tactile defensiveness and overall improvement in sensory organization, increased physical relaxation, improved motor coordination, and reduction in fearfulness.” Also, all the children demonstrated a greater openness and

enthusiasm for learning. In several cases, improvements were seen with just the music background. "However," she noted, "the degree of change was more pronounced when Hemi-Sync was combined with the music." Of the eighteen children, three showed minimal or inconsistent changes of behavior with Hemi-Sync.

Using dramatic, videotaped segments from actual therapy sessions, Dr. Morris illustrated significant changes in behavior associated with Hemi-Sync introduction. Some of the children, so sensorily dysfunctional that minimal contact or other sensory input caused extreme defensive reactions, and in one case, seizures, became visibly relaxed and focused after Hemi-Sync introduction. One child who could not tolerate being touched or held, reached out to Dr. Morris after listening to a Hemi-Sync METAMUSIC® tape for a few minutes. "A hug tells you you're doing something right," she said.

"With greater acceptance of touch and movement," Dr. Morris concluded, "small contrasts can be provided which enable the child to develop and enhance sensory discrimination. As discrimination skills evolve within the sensory system, the survival sensory system is brought into balance and sensory defensiveness is permanently reduced. Research to explore the addition of specific auditory facilitation with Hemi-Sync is warranted."

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